

Math 1  
Exam 4 Review

This exam will be on Friday, December 8. All of the standards from module 4 will be on this quiz:

- **4A: linear functions** Students determine intercepts and growth rates of linear functions and evaluate the use of various forms of linear equations.
- **4B: exponential functions** Students determine intercepts, growth rates, and formulas of exponential functions.
- **4C: function vocabulary** Students know the definitions of terms relating to functions (such as discrete, continuous, increasing, decreasing, domain, and range) and use these terms correctly.
- **4D: average rate of change** Students determine the average rate of change of a function on an interval.
- **4E: modeling with functions** Students use appropriate functions to model scenarios.

Questions that are labelled with standard 4E will also assess either 4A or 4B.

Average Rate of Change

The average rate of change on an interval is equal to the slope of the line segment whose endpoints are the two points on the function with  $x$  coordinates at the endpoints of the interval. For example, the average rate of change of  $y = x^2$  on  $[-5, 2]$  is

$$m = \frac{2^2 - (-5)^2}{2 - (-5)} = \frac{4 - 25}{7} = \frac{-21}{7} = -3.$$

Interest Formulas

Let  $P$  be the principal,  $A$  be the final balance (with  $P$  and  $A$  in the same units),  $r$  be the annual interest rate as a *decimal*, and  $t$  be the time in years.

The formula for the final balance for simple interest is

$$A = P(1 + rt).$$

The formula for the final balance for compound interest compounded once per year is

$$A = P(1 + r)^t.$$